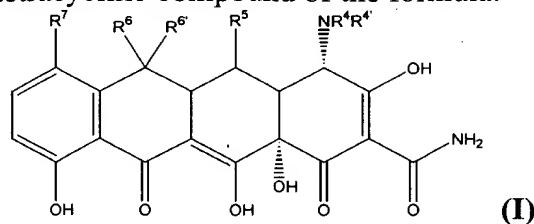


CLAIMS

1. A 7-substituted tetracycline compound of the formula:



- 5 wherein:

R^4 and $R^{4'}$ are each alkyl;

R^5 is hydrogen, hydroxyl, or a prodrug moiety;

R^6 and $R^{6'}$ are each independently hydrogen, hydroxyl, alkyl, or taken together, alkenyl;

- 10 R^7 is halo substituted or unsubstituted phenyl;

and pharmaceutically acceptable salts thereof.

2. The compound of claim 1, wherein R^5 , R^6 and $R^{6'}$ are each hydrogen and R^4 and $R^{4'}$ are each methyl.

- 15 3. The compound of claim 1, wherein R^7 is unsubstituted phenyl.

4. The compound of claim 3, wherein said compound is 7-phenylsancycline.

- 20 5. The compound of claim 1, wherein R^7 is 2-substituted phenyl.

6. The compound of claim 5, wherein said compound is selected from the group consisting of 7-(2-fluorophenyl) sancycline, 7-(2-chlorophenyl) sancycline, 7-(2-bromophenyl) sancycline, and 7-(2-iodophenyl) sancycline.

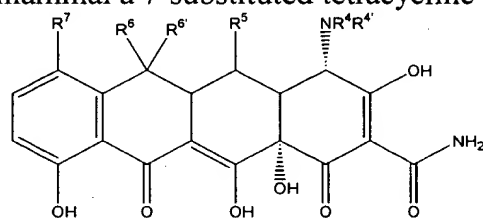
- 25 7. The compound of claim 1, wherein R^7 is 3-substituted phenyl.

8. The compound of claim 7, wherein said compound is selected from the group consisting of 7-(3-fluorophenyl) sancycline, 7-(3-chlorophenyl) sancycline, 7-(3-bromophenyl) sancycline, and 7-(3-iodophenyl) sancycline.

- 30 9. The compound of claim 1, wherein R^7 is 4-substituted phenyl.

10. The compound of claim 9, wherein said compound is selected from the group consisting of 7-(4-fluorophenyl) sancycline, 7-(4-chlorophenyl) sancycline, 7-(4-bromophenyl) sancycline, 7-(4-iodophenyl) sancycline, 7-(4-trichloromethylphenyl) sancycline, 7-(4-trifluoromethylphenyl) sancycline, 7-(4-tribromomethylphenyl) sancycline, and 7-(4-triiodomethylphenyl) sancycline.

11. A method for treating a tetracycline responsive state in a mammal, comprising administering to said mammal a 7-substituted tetracycline compound of formula (I):



10 wherein:

R^4 and $R^{4'}$ are each alkyl;

R^5 is hydrogen, hydroxyl, or a prodrug moiety;

R^6 and $R^{6'}$ are each independently hydrogen, hydroxyl, alkyl, or taken together, alkenyl;

15 R^7 is halo substituted or unsubstituted phenyl; and pharmaceutically acceptable salts thereof, such that the tetracycline responsive state is treated.

12. The method of claim 11, wherein R^5 , R^6 and $R^{6'}$ are each hydrogen and R^4 and $R^{4'}$ are each methyl.

20 13. The method of claim 11, wherein R^7 is unsubstituted phenyl.

14. The method of claim 13, wherein said compound is 7-phenylsancycline.

25 15. The method of claim 1, wherein R^7 is 2-substituted phenyl.

16. The method of claim 15, wherein said compound is selected from the group consisting of 7-(2-fluorophenyl) sancycline, 7-(2-chlorophenyl) sancycline, 7-(2-bromophenyl) sancycline, and 7-(2-iodophenyl) sancycline.

30 17. The method of claim 11, wherein R^7 is 3-substituted phenyl.

18. The method of claim 17, wherein said compound is selected from the group consisting of 7-(3-fluorophenyl) sancycline, 7-(3-chlorophenyl) sancycline, 7-(3-bromophenyl) sancycline, and 7-(3-iodophenyl) sancycline.

5 19. The method of claim 11, wherein R^7 is 4-substituted phenyl.

20. The method of claim 19, wherein said compound is selected from the group consisting of 7-(4-fluorophenyl) sancycline, 7-(4-chlorophenyl) sancycline, 7-(4-bromophenyl) sancycline, 7-(4-iodophenyl) sancycline, 7-(4-trichloromethylphenyl) sancycline, 7-(4-trifluoromethylphenyl) sancycline, 7-(4-tribromomethylphenyl) sancycline, and 7-(4-triiodomethylphenyl) sancycline.

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21. The method of claim 11, wherein said tetracycline responsive state is a bacterial infection.

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22. The method of claim 21, wherein said bacterial infection is associated with *E. coli*.

23. The method of claim 21, wherein said bacterial infection is associated with *S. aureus*.

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24. The method of claim 21, wherein said bacterial infection is associated with *E. faecalis*.

25 25. The method of claim 21, wherein said bacterial infection is resistant to other tetracycline antibiotics.

26. The method of claim 11, wherein said compound is administered with a pharmaceutically acceptable carrier.

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27. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

28. The pharmaceutical composition of claim 27, wherein said compound is selected from the group consisting of 7-phenyl sancycline, 7-(2-fluorophenyl) sancycline, 7-(2-chlorophenyl) sancycline, 7-(2-bromophenyl) sancycline, 7-(2-iodophenyl) sancycline, 7-(3-fluorophenyl) sancycline, 7-(3-chlorophenyl) sancycline, 7-(3-bromophenyl)

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sancycline, 7-(3-iodophenyl) sancycline, 7-(4-fluorophenyl) sancycline, 7-(4-chlorophenyl) sancycline, 7-(4-bromophenyl) sancycline, 7-(4-iodophenyl) sancycline, 7-(4-trichloromethylphenyl) sancycline, 7-(4-trifluoromethylphenyl) sancycline, 7-(4-tribromomethylphenyl) sancycline, and 7-(4-triiodomethylphenyl) sancycline.

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29. A tetracycline compound, wherein said compound is 7,9-diphenyl sancycline or a pharmaceutically acceptable salt thereof.

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30. A method for treating a tetracycline responsive state in a mammal, comprising administering to said mammal an effective amount of 7,9-diphenyl sancycline or a pharmaceutically acceptable salt thereof, such that said mammal is treated.

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31. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 29 and a pharmaceutically acceptable carrier.

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